Contents

NUMBER 102

RICHARD L. ROA and WILLIAM F. PICKARD: Further Experiments on the Low Frequency Excess Noise of the Vacuolar Resting Potential of *Chara braunii* 1

A. R. YEO, D. KRAMER, A. LÄUCHLI, and J. GULLASCH: Ion Distribution in Salt-stressed Mature *Zea mays* Roots in Relation to Ultrastructure and Retention of Sodium 17

L. S. KELDAY, D. J. F. BOWLING and M. G. PENNY: A Solid State Chloride-selective Microelectrode for use with Plant Tissue 31

J. SKIERCZYŃSKA, W. ZAREBSKI, J. SIELEWIÉSIUK, and E. ŚPIEWLA: Some Methods for the Measurements of Tonoplast Resistance of *Nitellopsis obtusa* 37

M. M. PEET, J. L. OZBUN, and D. H. WALLACE. Physiological and Anatomical Effects of Growth Temperature on *Phaseolus vulgaris* L. Cultivars 57

EDWIN L. FISCUS: Effects of Coupled Solute and Water Flow in Plant Roots with Special Reference to Brouwer's Experiment 71

SEAN COUGHLAN: Glycolate Metabolism in *Thallassiosira pseudonana* 78

H. Z. ENOCH and R. G. HURD: Effect of Light Intensity, Carbon Dioxide Concentration, and Leaf Temperature on Gas Exchange of Spray Carnation Plants 84

M. J. GOSS: Effects of Mechanical Impedance on Root Growth in Barley (*Hordeum vulgare* L.) I. Effects on the Elongation and Branching of Seminal Root Axes 96

T. M. CAPRON and T. A. MANSFIELD: Inhibition of Growth in Tomato by Air Polluted with Nitrogen Oxides 112

E. ZAMSKI and Y. TSIVION: Translocation in Plants Possessing Supernumerary Phloem. I. ^{14}C-Assimilates and Auxin in the Internal Phloem of Tobacco (*Nicotiana tabacum* L.) 117

Y. TSIVION and E. ZAMSKI: Translocation in Plants Possessing Supernumerary Phloem. II. The Included Phloem of *Bougainvillea glabra* Choisy and the Bicolateral Bundles of Cucumber (*Cucumis sativus* L.) 127

C. D. JOHN, V. LIMPINUNTANA, and H. GREENWAY: Interaction of Salinity and Anaerobiosis in Barley and Rice 133

P. J. KING: Studies on the Growth in Culture of Plant Cells. XXII. Growth Limitation by Nitrate and Glucose in Chemostat Cultures of *Acer pseudoplatanus* L. 142

JAMES A. BUNCE: Leaf Elongation in Relation to Leaf Water Potential in Soybean 156

H. G. JONES: Transpiration in Barley Lines with Differing Stomatal Frequencies 162

WILLIAM K. SMITH and PARK S. NOBEL: Temperature and Water Relations for Sun and Shade Leaves of a Desert Broadleaf, *Hyptis emoryi* 169

JANE E. LANCASTER, JAY D. MANN, and N. G. PORTER: Ineffectiveness of Abscisic Acid in Stomatal Closure of Yellow Lupin, *Lupinus luteus* var. Weiko III 184

S. A. Quarrie and H. G. Jones: Effects of Abscisic Acid and Water Stress on Development and Morphology of Wheat 192

I. E. Henson and C. T. Wheeler: Hormones in Plants Bearing Nitrogen-fixing Root Nodules: Distribution and Seasonal Changes in Levels of Cytokinins in *Alnus glutinosa* (L.) Gaertn 205

S. B. Narasimhareddy and P. M. Swamy: Gibberellins and Germination Inhibitors in Viable and Non-viable Seeds of Peanut (*Arachis hypogea* L.) 215

K. M. Marriott and D. H. Northcote: The Influence of Abscisic Acid Adenosine 3′,5′ Cyclic Phosphate and Gibberellic Acid on the Induction of Isocitrate Lyase Activity in the Endosperm of Germinating Castor Bean Seeds 219

Alison A. Powell and S. Matthews: Deteriorative Changes in Pea Seeds (*Pisum sativum* L.) Stored in Humid or Dry Conditions 225

Book Reviews

B. E. S. Gunning and A. W. Robards: Intercellular Communication in Plants: Studies on Plasmodesmata. J. L. Hall 235

U. Lüttge and M. G. Pitman: Transport in plants II. Part A: Cells. J. Barber 236

NUMBER 103

V. Ranga Rao: Effect of Root Temperature on the Infection Processes and Nodulation in *Lotus* and *Stylosanthes* 241

V. Ranga Rao: Effect of Temperature on the Nitrogenase Activity of Intact and Detached Nodules in *Lotus* and *Stylosanthes* 261

J. Grace and G. Russell: The Effect of Wind on Grasses III. Influence of Continuous Drought or Wind on Anatomy and Water Relations in *Festuca arundinacea* Schreb 268

C. J. Asher, G. W. Butler, and P. J. Peterson: Selenium Transport in Root Systems of Tomato 279

Evelyn Stevens and L. Stevens: Glucose-6-phosphate Dehydrogenase Activity under Conditions of Water Limitation: a Possible Model System for Enzyme Reactions in Unimbibed Resting Seeds and its Relevance to Seed Viability 292

Nicola E. Rogerson and S. Matthews: Respiratory and Carbohydrate Changes in Developing Pea (*Pisum sativum* L.) Seeds in Relation to their Ability to Withstand Desiccation 304

J. A. Raven: ATP Synthesis Coupled to Nitrate Photoreduction in the Alga *Hydrodictyon africanum* 314

D. W. Lawlor and H. Fock: Photosynthetic Assimilation of $^{14}CO_2$ by Water-stressed Sunflower Leaves at Two O_2 Concentrations and the Specific Activity of Products 320

D. W. Lawlor and H. Fock: Water Stress Induced Changes in the Amounts of Some Photosynthetic Assimilation Products and Respiratory Metabolites of Sunflower Leaves 329

BRADFORD O. BRATTON and EGBERT W. HENRY: Electrical Stimulation and its Effects on Indoleacetic Acid and Peroxidase Levels in Tomato Plants (*Lycopersicon esculentum*) 338

A. WRIGLEY and J. M. LORD: The Effects of Gibberellic Acid on Organelle Biogenesis in the Endosperm of Germinating Castor Bean Seeds 345

J. S. WEISTROP and A. I. STERN: Appearance of Photochemical Activity in Isolated Chloroplasts from Far-red illuminated Leaves of *Phaseolus vulgaris* 354

H. GEE: Control of Hypocotyl Hook Angle in *Phaseolus mungo* L. Role of Growth Substances 367

MICHAEL KNEE, JOHN A. SARGENT, and DAPHNE J. OSBORNE: Cell Wall Metabolism in Developing Strawberry Fruits 377

THOMAS L. ROST: The Position and Characteristics of 'Leaky' Cells in Root Tip Meristems of *Helianthus annuus* 397

NEIL G. GRANT and A. E. WALSBY: The Contribution of Photosynthate to Turgor Pressure Rise in the Planktonic Blue-green Alga *Anabaena flosaquae* 409

T. R. RICKETS: A Continuous Synchronous Culture and Sampling System for Algae 416

P. MARIANI COLOMBO, F. LUCCHIN, and B. COLOMBO: On the Control of the Population Effect on *in vitro* Assays of Pollen Germination 425

V. RAGHAVAN: Cell Morphogenesis and Macromolecule Synthesis during Phytochrome-controlled Germination of Spores of the Fern, *Pteris vittata* 439

D. J. PAOLILLO, JR. and L. B. KASS: The Relationship Between Cell Size and Chloroplast Number in the Spores of a Moss, *Polytrichum* 457

AJAZ-UL HAQUE, I. WEISGERBER, and W. KLEIN: Absorption, Efflux, and Metabolism of the Herbicide [^{14}C]Buturon as Affected by Plant Nutrition 468

A. S. RAGHAVENDRA and V. S. R. DAS: Antitranspirant Activity of Inhibitors of Cyclic Photophosphorylation 480

ALI T. AYOUB: Some Primary Features of Salt Tolerance in Senna (*Cassia acutifolia*) 484

J. D. BRIERS: The Measurement of Plant Elongation Rates by Means of Holographic Interferometry: Possibilities and Limitations 493

F. R. MINCHIN, M. C. P. NEVES, R. J. SUMMERFIELD, and A. C. RICHARDSON: A Chamber Designed for Continuous, Long-term Monitoring of Legume Root Respiration 507

BOOK REVIEWS

K. ESSER: KRYPTOGAMEN: Blaualgen, Algen, Pilze, Flechten. P. R. BELL 515

O. H. FRANKEL and J. G. HAWKES: Crop genetic Resources for Today and Tomorrow. N. L. INNES 516

NUMBER 104

I. F. BIRD, M. J. CORNELIUS, and A. J. KEYS: Effects of Temperature on Photosynthesis by Maize and Wheat 519

A. J. Keys, E. V. S. B. Sampaio, M. J. Cornelius, and I. F. Bird: Effect of Temperature on Photosynthesis and Photorespiration of Wheat Leaves 525

H. Greenway, T. Setter, and Kate Hackling: Some General Characteristics of Glycolysis *in vitro* and its Inhibition by High Concentrations of Chloride Salts 534

H. Greenway and T. Setter: Effects of Chloride Salts at High Concentrations on Glycolysis *in vitro* 545

Graeme E. Hobson and Jack N. Davies: Mitochondrial Activity and Carbohydrate Levels in Tulip Bulbs in Relation to Cold Treatment 559

P. T. Slack, M. Black, and J. M. Chapman: The Control of Lipid Mobilisation in *Cucumis* Cotyledons 569

R. B. Lee: Effects of Organic Acids on the Loss of Ions from Barley Roots 578

R. M. Wallsgrove, E. Harel, P. J. Lea, and B. J. Miflin: Studies on Glutamate Synthase from the Leaves of Higher Plants 588

P. R. Shewry, Helen M. Pratt, M. J. Charlton, and B. J. Miflin: Two-Dimensional Separation of the Prolamins of Normal and High Lysine Barley (*Hordeum vulgare* L.) 597

Anthony L. Moore and S. Brian Wilson: Translocation of Some Anions, Cations, and Acids in Turnip (*Brassica napus* L.) Mitochondria 607

Ephraim Epstein and Shimon Lavee: Uptake, Translocation, and Metabolism of IAA in the Olive (*Olea europea*) I. 619

Ephraim Epstein and Shimon Lavee: Uptake, Translocation, and Metabolism of IAA in the Olive (*Olea europea*) II. 629

I. Adato and S. Gazit: Role of Ethylene in Avocado Fruit Development and Ripening I. 636

I. Adato and S. Gazit: Role of Ethylene in Avocado Fruit Development and Ripening II. 644

I. J. Dymock and A. W. Bown: Antagonism Between Malate and Ethylene in the Regulation of *Avena sativa* Coleoptile Elongation 650

T. W. Hegarty: Seed and Seedling Susceptibility to Phased Moisture Stress in Soil 659

Mary Edwards and Hans Meidner: Direct Measurements of Turgor Pressure Potentials III. 669

M. S. Green and J. R. Etherington: Oxidation of Ferrous Iron by Rice (*Oryza sativa* L.) Roots: a Mechanism for Waterlogging Tolerance? 678

William B. Sisson and Martyn M. Caldwell: Atmospheric Ozone Depletion: Reduction of Photosynthesis and Growth of a Sensitive Higher Plant Exposed to Enhanced u.v.-B Radiation 691

M. E. Resnik, S. G. de Palomar, and M. E. Manes: Phosphate Translocation from Young and Ageing Sett Roots in Sugar Cane Plants (*Saccharum officinarum* L.) 706

G. F. Barclay, K. J. Oparka, and R. P. C. Johnson: Induced Disruption of Sieve Element Plastids in *Heracleum mantegazzianum* L. 709

W. S. Courtis and A. J. Pappelis: Increase in *Allium cepa* Nuclear Dry Mass Following Exposure to Ambient Atmosphere 719

W. S. Courtis and A. J. Pappelis: Effect of Exposure to Ambient Atmosphere on Nucleolar Size and DNA, RNA, and Protein Content of *Allium cepa* Epidermal Nuclei 724

T. W. Ashenden and T. A. Mansfield: Influence of Wind Speed on the Sensitivity of Ryegrass to SO_2 729

B. D. Patterson and D. Graham: Effect of Chilling Temperatures on the Protoplasmic Streaming of Plants from Different Climates 736

A. Goldsworthy, R. Gates, and D. L. Ridgley: An Electronic Coleoptile Measuring Device 744

John Roberts: The Use of Tree-cutting Techniques in the Study of the Water Relations of Mature *Pinus sylvestris* L. I. 751

Book Reviews

M. H. Arnold: Agricultural Research for Development: The Namulonge Contribution. G. W. Cooke 769

I. F. Wardlaw and J. B. Passioura: Transport and Transfer Processes in Plants. C. P. Whittingham 772

NUMBER 105

Roger C. Muren and D. E. Fosket: Cytokinin-Mediated Translational Control of Protein Synthesis in Cultured Cells of *Glycine max* 775

R. Phillips and G. G. Henshaw: The Regulation of Synthesis of Phenolics in Stationary Phase Cell Cultures of *Acer pseudoplatanus* L. 785

M. L. Thakur: Phenolic Growth Inhibitors Isolated from Dormant Buds of Sugar Maple (*Acer saccharum Marsh*) 795

A. G. Thompson and J. Bruinsma: Xanthoxin: A Growth Inhibitor in Light-grown Sunflower Seedlings, *Helianthus annuus* L. 804

J. B. Reid and I. C. Murfeit: Flowering in *Pisum*: The Effect of Genotype, Plant Age, Photoperiod, and Number of Inductive Cycles 811

Ruth Volk, E. Harel, A. M. Mayer, and Esther Gan-Zvi: Catechol Oxidase in Tissue Culture of Apple Fruit 820

Anne S. Pollard, Adrian J. Parr, and Brian C. Loughman: Boron in Relation to Membrane Function in Higher Plants 831

B. S. Sangwan-Norreel: Androgenic Stimulating Factors in the Anther and Isolated Pollen Grain Culture of *Dature innoxia* Mill 843

R. D. Macleod and D. Francis: Some Observations of Invertase Activity in Roots of *Vicia faba* L. 853

J. J. Phillipson and M. P. Coutts: The Influence of Mineral Nutrition on the Root Development of Trees II. 864

M. G. T. Shone and Ann V. Wood: Longitudinal Movement and Loss of Nutrients, Pesticides, and Water in Barley Roots 872

R. D. Graham and D. J. F. Bowling: Effect of the Shoot on the Transmembrane Potentials of Post Cortical Cells of Sunflower 886

W. P. Anderson, D. A. Willcocks, and Barbara J. Wright: Electrophysiological Measurements on the Root of *Atriplex hastata* 894

C. D. Kennedy: The Effect of D-Glucose and Other Sugars on the Trans-root Potential of *Zea mays* 903

E. W. R. Barlow, Rana Munns, N. Steele Scott, and A. H. Reisner: Water Potential, Growth, and Polyribosome Content of the Stressed Wheat Apex 909

R. M. M. Crawford and T. J. Huxter: Root Growth and Carbohydrate Metabolism at Low Temperatures 917

M. Ford, M. Black, and J. M. Chapman: Inter-organ Synergism and the Control of Chlorophyll Accumulation in Sunflower (*Helianthus annuus*) Cotyledons 926

A. J. Bolton and J. A. Petty: Variation of Susceptibility to Aspiration of Bordered Pits in Conifer Wood 935

Ian M. Bartley: A Further Study of β-Galactosidase Activity in Apples Ripening in Store 943

G. J. Waughman: The Effect of Temperature on Nitrogenase Activity 949

Rohini M. K. Kumarasinghe and P. S. Nutman: *Rhizobium*-stimulated Callose Formation in Clover Root Hairs and its Relation to Infection 961

A. Hadas: Water Uptake and Germination of Leguminous Seeds in Soils of Changing Matric and Osmotic Water Potential 977

W. J. Owen, M. E. Delaney, and L. J. Rogers: Studies on the Sites of Inhibition of Photosynthetic Electron Transport in Barley by DDT(1,1,1-trichloro-2,2-bis(*p*-chlorophenyl)ethane) 986

Vivienne Frier: The Relationship Between Photosynthesis and Tuber Growth in *Solanum tuberosum* L. 999

B. Marshall and P. V. Biscoe: A Mobile Apparatus for Measuring Leaf Photosynthesis in the Field 1008

J. C. Rutter, W. R. Johnston, and C. M. Willmer: Free Sugars and Organic Acids in the Leaves of Various Plant Species and Their Compartmentation Between the Tissues 1019

S. J. Wainwright and H. W. Woolhouse: Some Physiological Aspects of Copper and Zinc Tolerance in *Agrostis tenuis* Sibth: Cell Elongation and Membrane Damage 1029

Alistair Thompson, John Vogel, and Robert Edward Lee: Carbon Dioxide Uptake in Relation to a Plastid Inclusion Body in the Succulent *Kalanchoe pinnata* Persoon 1037

R. Fenton, W. J. Davies, and T. A. Mansfield: The role of Farnesol as a Regulator of Stomatal Opening in *Sorghum* 1043

Benno M. Eller: Leaf Pubescence: The Significance of Lower Surface Hairs for the Spectral Properties of the Upper Surface 1054

BOOK REVIEWS

J. A. BRYANT: Molecular Aspects of Gene Expression in Plants. L. FOWDEN 1060

A. JÁNOSSY and F. G. H. LUPTON: Heterosis in Plant Breeding. N. W. SIMMONDS 1061

B. J. DEVERALL: Defence Mechanisms of Plants. D. S. INGRAM 1063

J. FREIND and D. R. THRELFALL: Annual Proceedings of the Phytochemical Society Number 13. Biochemical Aspects of Plant-Parasite Relationships. D. PITT 1064

J. F. PEBERDY, A. H. ROSE, H. J. ROGERS, and E. C. COCKING: Microbial and Plant Protoplasts. D. H. NORTHCOTE 1066

R. HEITEFUSS and P. H. WILLIAMS: Physiological Plant Pathology, Encyclopedia of Plant Physiology, New Series, Volume 4, 1976. R. K. S. WOOD 1067

NUMBER 106

M. P. COUTTS and J. J. PHILLIPSON: The Influence of Mineral Nutrition on the Root Development of Trees. III. Plasticity of Root Growth in Response to Changes in the Nutrient Environment 1071

I. E. HENSON and T. C. WHEELER: Hormones in Plants Bearing Nitrogen-fixing Root Nodules: Partial Characterization of Cytokinins from Root Nodules of *Alnus glutinosa* (L.) Gaertn. 1076

I. E. HENSON and T. C. WHEELER: Hormones in Plants bearing Nitrogen-fixing Root Nodules: Metabolism of [8-^{14}C]Zeatin in Root Nodules of *Alnus glutinosa* (L.) Gaertn. 1087

I. E. HENSON and T. C. WHEELER: Hormones in Plants Bearing Nitrogen-fixing Root Nodules: Cytokinin Transport from the Root Nodules of *Alnus glutinosa* (L.) Gaertn 1099

R. T. JASDANWALA, Y. D. SINGH, and J. J. CHINOY: Auxin Metabolism in Developing Cotton Hairs 1111

L. H. AUNG and J. M. BYRNE: The Effects of Sodium 2,3-Dichloroisobutyrate on Microsporogenesis and Fruit Set in *Lycopersicon esculentum* Mill 1117

J. KIGEL, M. OFIR, and D. KOLLER: Control of the Germination Responses of *Amaranthus retroflexus* L. Seeds by their Parental Photothermal Environment 1125

PAUL G. MAHLBERG and STEPHAN YARUS: Effects of Light, pH, Temperature, and Crowding on Megaspore Germination and Sporophyte Formation in *Marsilea* 1137

E. W. SIMON: Leakage from Fruit Cells in Water 1147

M. E. DELANEY, W. J. OWEN, and L. J. ROGERS: Accumulation of Sugars and Polysaccharide Accompanying an Inhibition of the Light Reaction in Photosynthesis 1153

K. S. KUMARASINGHE, A. J. KEYS, and C. P. WHITTINGHAM: Effects of Certain Inhibitors on Photorespiration by Wheat Leaf Segments 1163

A. S. RAGHAVENDRA and V. S. R. DAS: Effects of Light Quality on Photosynthetic Carbon Metabolism in C_4 and C_3 plants: Rapid Movements of Photosynthetic Intermediates Between Mesophyll and Bundle Sheath Cells 1169

S. Beer, A. Eshel, and Y. Waisel: Carbon Metabolism in Seagrasses I. The Utilization of Exogenous Inorganic Carbon Species in Photosynthesis 1180

N. A. Walker, F. A. Smith: Circulating Electric Currents Between Acid and Alkaline Zones Associated with HCO_3^- Assimilation in *Chara* 1190

Sean Coughlan: Sulphate Uptake in *Fucus serratus* 1207

A. J. Wilson and A. W. Robards: Effects of Mechanical Impedance on Root Growth in Barley, *Hordeum vulgare* L. II. Effects on Cell Development in Seminal Roots 1216

M. Sreedhara Murthy and S. V. Shihora: Effects of Aqueous Extracts and Leachates of *Aristida Adscensionis* on *Indigofera cordifolia* 1229

Vera Balatková, Eva Hrabětová, and J. Tupý: The Growth Activity and Fertilizing Capacity of Submersely Cultivated Pollen Tubes of *Nicotiana tabacum* L. 1231

Book Reviews

H. Smith: Light and Plant Development. J. R. Lenton 1238

P. Cualtrecasas: The Specificity and Action of Animal, Bacterial and Plant Toxins. S. R. Elsden 1239

Lorrin W. Roberts: Cytodifferentiation in Plants: Xylogenesis as a Model System. P. J. Peterson 1240

J. Reinert and Y. P. S. Bajaj: Applied and Fundamental Aspects of Plant Cell, Tissue, and Organ Culture. N. Sunderland 1243

NUMBER 107

K. S. Kumarasinghe, A. J. Kaye, and C. P. Whittingham: The Flux of Carbon through the Glycolate Pathway During Photosynthesis by Wheat Leaves 1247

A. J. Gordon, G. J. A. Ryle, and C. E. Powell: The Strategy of Carbon Utilization in Uniculm Barley I. The Chemical Fate of Photosynthetically Assimilated ^{14}C 1258

C. R. Hipkin and P. J. Syrett: Post-transcriptional Control of Nitrate Reductase Formation in Green Algae 1270

T. R. Ricketts: Changes in Average Cell Concentrations of Various Constituents During Synchronous Division of *Platymonas striata* Butcher (Prasinophyceae) 1278

Wolf Dietrich Jeschke: K^+-Na^+ Exchange and Selectivity in Barley Root Cells: Effect of Na^+ fluxes 1289

W. J. Lucas: Plasmalemma Transport of HCO_3^- and OH^- in *Chara corallina*: Inhibitory Effect of Ammonium Sulphate 1307

W. J. Lucas: Analogue Inhibition of the Active HCO_3^- Transport Site in the Characean Plasma Membrane 1321

M. Tal and A. Benzioni: Ion Imbalance in *Capsicum annum, scabrous diminutive*, a wilty mutant of pepper I. Sodium Fluxes 1337

Heiner Goldbach and Eva Goldbach: Abscisic Acid Translocation and Influence of Water Stress on Grain Abscisic Acid Content 1342

J. Van Staden and G. G. Dimalla: A Comparison of the Endogenous Cytokinins in the Roots and Xylem Exudate of Nematode-resistant and Susceptible Tomato Cultivars 1351

J. B. Reid and I. C. Murfet: Flowering in *Pisum:* the Effect of Light Quality on the Genotype *lf e Sn Hr* 1357

M. Horner, J. A. McComb, A. J. McComb, and H. E. Street: Ethylene Production and Plantlet Formation by *Nicotiana* Anthers Cultured in the Presence and Absence of Charcoal 1365

Jane E. Lancaster and Jay D. Mann: Extrastomatal control of Transpiration in Leaves of Yellow Lupin (*Lupinus luteus* var. Weiko III) after Drought or Abscisic Acid Treatment 1373

G. F. J. Milford, W. F. Cormack, and M. J. Durrant: Effects of Sodium Chloride on Water Status and Growth of Sugar Beet 1380

B. W. Veen: The Uptake of Potassium, Nitrate, Water, and Oxygen by a Maize Root System in Relation to its Size 1389

D. W. Sheriff: The Effect of Humidity on Water Uptake by, and Viscous Flow Resistance of, Excised Leaves of a Number of Species: Physiological and Anatomical Observations 1399

Hans Meidner: Sap Exudation via the Epidermis of Leaves 1408

Book Reviews

R. Frankel and E. Galun: Pollination Mechanisms, Reproduction and Plant Breeding. D. Roy Davies 1417

V. Raghavan: Experimental Embryogenesis in Vascular Plants. Experimental Botany: An International Series of Monographs Volume 10. P. R. Bell 1418

M. Luckner: Secondary Metabolism in Plants and Animals. T. Ap Rees 1419

International Potash Institute: Proceedings of the 11th Colloquium on Fertilizer Use and Protein Production. O. Talibudeen 1420

International Potash Institute: Bulletin No. 3. Fertilizing for High Yield—Rice. O. Talibudeen 1421

International Potash Institute: Bulletin No. 4. Fertilizing for High Yield—Citrus. O. Talibudeen 1422

International Potash Institute: Research Topics, No. 2. Abstracts of the Papers submitted to the 5th IPI-Competition for Young Research Workers. O. Talibudeen 1422

Index to Volume 28

ADATO, I., and GAZIT, S. Role of Ethylene in Avocado Fruit Development and Ripening I. 636

ADATO, I., and GAZIT, S. Role of Ethylene in Avocado Fruit Development and Ripening II. 644

ANDERSON, W. P., WILLCOCKS, D. A., and WRIGHT, BARBARA J. Electrophysiological Measurements on the Root of *Atriplex hastata* 894

ASHENDEN, T. W., and MANSFIELD, T. A. Influence of Wind Speed on the Sensitivity of Ryegrass to SO_2 729

ASHER, C. J., BUTLER, G. W., and PETERSON, P. J. Selenium Transport in Root Systems of Tomato 279

AUNG, L. H., and BYRNE, J. M. The Effects of Sodium 2,3-Dichloroisobutyrate on Microsporogenesis and Fruit Set in *Lycopersicon esculentum* Mill. 1117

AYOUB, ALI T. Some Primary Features of Salt Tolerance in Senna (*Cassia acutifolia*) 484

BALATKOVÁ, VĚRA, HRABĚTOVÁ, EVA, and TUPÝ, J. The Growth Activity and Fertilizing Capacity of Submersely Cultivated Pollen Tubes of *Nicotiana tabacum* L. 1231

BARCLAY, G. F., OPARKA, K. J., and JOHNSON, R. P. C. Induced Disruption of Sieve Element Plastids in *Heracleum mantegazzianum* L. 709

BARLOW, E. W. R., MUNNS, RANA., STEELE SCOTT, N., and REISNER, A. H. Water Potential, Growth, and Polyribosome Content of the Stressed Wheat Apex 909

BARTLEY, IAN M. A Further Study of β-Galactosidase Activity in Apples Ripening in Store. 943

BEER, S., ESHEL, A., and WAISEL, Y. Carbon Metabolism in Seagrasses I. The Utilization of Exogenous Inorganic Carbon Species in Photosynthesis 1180

BENZIONI, A., *see* TAL. M.

BIRD, I. F., CORNELIUS, M. J., and KEYS, A. J. Effects of Temperature on Photosynthesis by Maize and Wheat 519

BISCOE, P. V., *see* MARSHALL, B.

BIRD, I. F., *see* KEYS, A. J.

BLACK, M., *see* FORD, M.

BLACK, M., *see* SLACK, P. T.

BOLTON, A. J., and PETTY, J. A. Variation of Susceptibility to Aspiration of Bordered Pits in Conifer Wood 935

BOWLING, D. J. F., *see* GRAHAM, R. D.

BOWLING, D. J. F., *see* KELDAY, L. S.

BOWN, A. W., *see* DYMOCK, I. J.

BRATTON, BRADFORD O., and HENRY, EGBERT W. Electrical Stimulation and its Effects on Indoleacetic Acid and Peroxidase Levels in Tomato Plants (*Lycopersicon esculentum*) 338

BRIAN WILSON, S., *see* MOORE, ANTHONY L.

BRIERS, J. D. The Measurement of Plant Elongation Rates by Means of Holographic Interferometry: Possibilities and Limitations 493

BRUINSMA, J., *see* THOMPSON, A. G.

BUNCE, JAMES A. Leaf Elongation in Relation to Leaf Water Potential in Soybean 156

BUTLER, G. W., *see* ASHER, C. J.

BYRNE, J. M., *see* AUNG, L. H.

CALDWELL, MARTYN M., *see* SISSON, WILLIAM B.

CAPRON, T. M., and MANSFIELD, T. A. Inhibition of Growth in Tomato by Air Polluted with Nitrogen Oxides 112

CHAPMAN, J. M., *see* FORD, M.

CHAPMAN, J. M., *see* SLACK, P. T.
CHARLTON, M. J., *see* SHEWRY, P. R.
CHINOY, J. J., *see* JASDANWALA, R. T.
COLOMBO, B., *see* COLOMBO, P. MARIANI
COLOMBO, P. MARIANI, LUCCHIN, F., and COLOMBO, B. On the Control of the Population Effects on *in vitro* Assays of Pollen Germination 425
CORMACK, W. F., *see* MILFORD, G. F. J.
CORNELIUS, M. J., *see* BIRD, I. F.
CORNELIUS, M. J., *see* KEYS, A. J.
COUGHLAN, SEAN. Glycolate Metabolism in *Thallassiosira pseudonana* 78
COUGHLAN, SEAN. Sulphate Uptake in *Fucus serratus* 1207
COURTIS, W. S., and PAPPELIS, A. J. Increase in *Allium cepa* Nuclear Dry Mass Following Exposure to Ambient Atmosphere 719
COURTIS, W. S., and PAPPELIS, A. J. Effect of Exposure to Ambient Atmosphere on Nucleolar Size and DNA, RNA, and Protein Content of *Allium cepa* Epidermal Nuclei 724
COUTTS, M. P., and PHILLIPSON, J. J. The Influence of Mineral Nutrition on the Root Development of Trees. III. Plasticity of Root Growth in Response to Changes in the Nutrient Environment 1071
COUTTS, M. P., *see* PHILIPSON, J. J.
CRAWFORD, R. M. M., and HUXTER, T. J. Root Growth and Carbohydrate Metabolism at Low Temperatures 917
DAS, V. S. R., *see* RAGHAVENDRA, A. S.
DAVIES, JACK N., *see* HOBSON, GRAEME E.
DAVIES, W. J., *see* FENTON, R.
DELANEY, M. E., OWEN, W. J., and ROGERS, L. J. Accumulation of Sugars and Polysaccharide Accompanying an Inhibition of the Light Reaction in Photosynthesis 1153
DELANEY, M. E., *see* OWEN, W. J.
DE PALOMAR, S. G., *see* RESNIK, M. E.
DIMALLA, G. G., *see* VAN STADEN, J.
DURRANT, M. J., *see* MILFORD, G. F. J.
DYMOCK, I. J., and BOWN, A. W. Antagonism Between Malate and Ethylene in the Regulation of *Avena sativa* Coleoptile Elongation 650
EDWARDS, MARY, and MEIDNER, HANS. Direct Measurements of Turgor Pressure Potentials III. 669
ELLER, BENNO M. Leaf Pubescence: The Significance of Lower Surface Hairs for the Spectral Properties of the Upper Surface 1054
ENOCH, H. Z., and HURD, R. G. Effect of Light Intensity, Carbon Dioxide Concentration, and Leaf Temperature on Gas Exchange of Spray Carnation Plants 84
EPSTEIN, EPHRAIM, and LAVEE, SHIMON. Uptake Translocation, and Metabolism of IAA in the Olive (*Olea europea*) I. 619
EPSTEIN, EPHRAIM, and LAVEE, SHIMON. Uptake Translocation, and Metabolism of IAA in the Olive (*Olea europa*) II. 629
ESHEL, A., *see* BEER, S.
ETHERINGTON, J. R., *see* GREEN, M. S.
FENTON, R., DAVIES, W. J., and MANSFIELD T. A. The Role of Farnesol as a Regulator of Stomatal Opening in *Sorghum* 1043
FISCUS, EDWIN L. Effects of Coupled Solute and Water Flow in Plant Roots with Special Reference to Brouwer's Experiment 71
FOCK, H., *see* LAWLOR, D. W.
FORD, M., BLACK, M., and CHAPMAN. J. M. Inter-organ Synergism and the Control of Chlorophyll Accumulation in Sunflower (*Helianthus annuus*) Cotyledons 926
FOSKET, D. E., *see* MUREN, ROGER C.
FRANCIS, D., *see* MACLEOD, R. D.
FRIER, VIVIENNE. The Relationship Between Photosynthesis and Tuber Growth in *Solanum tuberosum* L. 999
GAN-ZVI, ESTHER., *see* VOLK, RUTH
GATES, R., *see* GOLDSWORTHY, A.

GAZIT, S., *see* ADATO, I.
GEE, H. Control of Hypocotyl Hook Angle in *Phaseolus mungo* L. Role of Growth Substances 367
GOLDBACH, EVA, *see* GOLDBACH, HEINER.
GOLDBACH, HEINER, and GOLDBACH, EVA. Abscisic Acid Translocation and Influence of Water Stress on Grain Abscisic Acid Content 1342
GOLDSWORTHY, A., GATES, R., and RIDGLEY, D. L. An Electronic Coleoptile Measuring Device 744
GORDON, A. J., RYLE, G. J. A., and POWELL, C. E. The Strategy of Carbon Utilization in Uniculm Barley I. The Chemical Fate of Photosynthetically Assimilated ^{14}C. 1258
GOSS, M. J. Effects of Mechanical Impedance on Root Growth in Barley (*Hordeum vulgare* L.) I. Effects on the Elongation and Branching of Seminal Root Axes. 96
GRACE, J., and RUSSELL, G. The Effect of Wind on Grasses III. Influence of Continuous Drought or Wind on Anatomy and Water Relations in *Festuca arundinacea* Schreb. 268
GRAHAM, D., *see* PATTERSON, B. D.
GRAHAM, R. D., and BOWLING, D. J. F. Effect of the Shoot on the Transmembrane Potentials of Root Cortical Cells of Sunflower 886
GRAHAM, R. D., and BOWLING, D. J. F. Effect of the Shoot on the Transroot Potential of *Zea mays* 903
GRANT, NEIL G., and WALSBY, A. E. The Contribution of Photosynthate to Turgor Pressure Rise in the Planktonic Blue-green Alga *Anabaena flosaquae* 409
GREEN, M. S., and ETHERINGTON, J. R. Oxidation of Ferrous Iron by Rice (*Oryza sativa* L.) Roots: a Mechanism for Waterlogging Tolerance? 678
GREENWAY, H., *see* JOHN, C. D.
GREENWAY, H., and SETTER, T. Effects of Chloride Salts at High Concentrations on Glycolysis *in vitro* 545
GREENWAY, H., SETTER, T., and HACKLING, KATE. Some General Characteristics of Glycolysis *in vitro* and its Inhibition by High Concentrations of Chloride Salts 534
GULLASCH, J., *see* YEO A. R.
HACKLING, KATE, *see* GREENWAY, H.
HADAS, A. Water Uptake and Germination of Leguminous Seeds in Soils of Changing Matric and Osmotic Water Potential 977
HAQUE, AJAZ-UL, WEISBERGER, I., and KLEIN, W. Absorption, Efflux, and Metabolism of the Herbicide [^{14}C]Buturon as Affected by Plant Nutrition 468
HAREL, E., *see* VOLK, RUTH.
HAREL, E., *see* WALLSGROVE, R. M.
HEGARTY, T. W. Seed and Seedling Susceptibility to Phased Moisture Stress in Soil 659
HENRY, EGBERT W., *see* BRATTON, BRADFORD O.
HENSHAW, G. G., *see* PHILLIPS, R.
HENSON, I. E., and WHEELER, C. T. Hormones in Plants Bearing Nitrogen-fixing Root Nodules: Distribution and Seasonal Changes in Levels of Cytokinins in *Alnus glutinosa* (L.) Gaertn. 205
HENSON, I. E., and WHEELER, T. C. Hormones in Plants Bearing Nitrogen-fixing Root Nodules: Partial Characterisation of Cytokinins from Root Nodules of *Alnus glutinosa* (L.) Gaertn. 1076
HENSON, I. E., and WHEELER, T. C. Hormones in Plants Bearing Nitrogen-fixing Root Nodules: Metabolism of [8-^{14}C]Zeatin in Root Nodules of *Alnus glutinosa* (L.) Gaertn. 1087
HENSON, I. E., and WHEELER, T. C. Hormones in Plants Bearing Nitrogen-fixing Root Nodules: Cytokinin Transport from the Root Nodules of *Alnus glutinosa* (L.) Gaertn. 1099
HIPKIN, C. R., and SYRETT, P. J. Post-transcriptional Control of Nitrate Reductase Formation in Green Algae 1270
HOBSON, GRAEME E., and DAVIS, JACK N. Mitochondrial Activity and Carbohydrate Levels in Tulip Bulbs in Relation to Cold Treatment 559
HORNER, M., MCCOMB, J. A., MCCOMB, A. J., and STREET, H. E. Ethylene Production and Plantlet Formation by *Nicotiana* Anthers Cultured in the Presence and Absence of Charcoal 1365
HRABĚTOVÁ, EVA., *see* BALATKOVÁ, VĚRA.

HURD, R. G., *see* ENOCH, H. Z.
HUXTER, T. J., *see* CRAWFORD, R. M. M.
JASDANWALA, R. T., SINGH, Y. D., and CHINOY, J. J. Auxin Metabolism in Developing Cotton Hairs 1111
JESCHKE, WOLF DIETRICH. K^+-Na^+ Exchange and Selectivity in Barley Root Cells: Effect of Na^+ Fluxes. 1289
JOHN, C. D., LIMPINUNTANA, V., and GREENWAY, H. Interaction of Salinity and Anaerobiosis in Barley and Rice 133
JOHNSON, R. P. C., *see* BARCLAY, G. F.
JOHNSTON, W. R., *see* RUTTER, J. C.
JONES, H. G. Transpiration in Barley Lines with Differing Stomatal Frequencies 162
JONES, H. G., *see* QUARRIE, S. A.
KASS, L. B., *see* PAOLILLO, JR., D. J.
KELDAY, L. S., BOWLING, D. J. F., and PENNY, M. G. A Solid State Chloride-selective Microelectrode for use with Plant Tissue 31
KENNEDY, C. D. The Effect of D-Glucose and Other Sugars on the Trans-root Potential of *Zea mays*. 903
KEYS, A. J., *see* BIRD, I. F.
KEYS, A. J., *see* KUMARASINGHE, K. S.
KEYS, A. J., SAMPAIO, E. V. S. B., CORNELIUS, M. J., and BIRD, I. F. Effect of Temperature on Photosynthesis and Photorespiration of Wheat Leaves. 525
KIGEL, J., OFIR, M., and KOLLER, D. Control of the Germination Responses of *Amaranthus retroflexus* L. Seeds by their Parental Photothermal Environment. 1125
KING, P. J. Studies on the Growth in Culture of Plant Cells. XXII. Growth Limitation by Nitrate and Glucose in Chemostat Cultures of *Acer pseudoplatanus* L. 142
KLEIN, W., *see* HAQUE, AJAZ-UL.
KNEE, MICHAEL, SARGENT, JOHN A., and OSBORNE, DAPHNE J. Cell Wall Metabolism in Developing Strawberry Fruits 377
KOLLER, D., *see* KIGEL, J.
KRAMER, D., *see* YEO, A. R.
KUMARASINGHE, K. S., KEYS, A. J., and WHITTINGHAM, C. P. Effects of Certain Inhibitors on Photorespiration by Wheat Leaf Segments.
KUMARASINGHE, ROHINI M. K., and NUTMAN, P. S. *Rhizobium*-stimulated Callose Formation in Clover Root Hairs and its Relation to Infection. 961
KUMARASINGHE, K. S., KEYS, A. J., and WHITTINGHAM, C. P. The Flux of Carbon through the Glycolate Pathway During Photosynthesis by Wheat Leaves. 1247
LANCASTER, JANE E., and MANN, JAY D. Extrastomatal Control of Transpiration in Leaves of Yellow Lupin (*Lupinus luteus* var. Weiko III) after Drought or Abscisic Acid Treatment. 1373
LANCASTER, JANE E., MANN, JAY D., and PORTER, N. G. Ineffectiveness of Abscisic Acid in Stomatal Closure of Yellow Lupin, *Lupinus luteus* var. Weiko III 184
LAVEE, SHIMON., *see* EPSTEIN, EPHRAIM.
LAWLOR, D. W., and FOCK, H. Photosynthetic Assimilation of $^{14}CO_2$ by Water-stressed Sunflower Leaves at Two O_2 Concentrations and the Specific Activity of Products 320
LAWLOR, D. W., and FOCK, H. Water Stress Induced Changes in the Amounts of Some Photosynthetic Assimilation Products and Respiratory Metabolites of Sunflower Leaves. 329
LAUCHLI, A., *see* YEO, A. R.
LEA, P. J. *see*., WALLSGROVE, R. M.
LEE, R. B. Effects of Organic Acids on the Loss of Ions from Barley Roots 578
LEE, ROBERT EDWARD., *see* THOMPSON, ALISTAIR.
LIMPINUNTANA, V., *see*., JOHN, C. D.
LORD, J. M., *see* WRIGLEY, A.
LOUGHMAN, BRIAN C., *see* POLLARD, ANNE S.
LUCAS, W. J. Analogue Inhibition of the Active HCO_3^- Transport Site in the Characean Plasma Membrane 1321
LUCAS, W. J. Plasmalemma Transport of HCO_3^- and OH^- in *Chara corallina*: Inhibitory Effect of Ammonium Sulphate 1307
LUCCHIN, F., *see* COLOMBO, P. MARIANI

MACLEOD, R. D., and FRANCIS, D. Some Observations on Invertase Activity in Roots of *Vicia faba* L. 853
MAHLBERG, PAUL G., and YARUS, STEPHAN. Effects of light, pH, Temperature, and Crowding on Megaspore Germination and Sporophyte Formulation in *Marsilea* 1137
MANES, M. E., *see* RESNIK, M. E.
MANN, JAY D., *see* LANCASTER, JANE E.
MANSFIELD, T. A., *see* ASHENDEN, T. W.
MANSFIELD, T. A., *see* CAPRON, T. M.
MANSFIELD, T. A., *see* FENTON, R.
MARRIOTT, K. M., and NORTHCOTE, D. H. The Influence of Abscisic Acid, Adenosine 3′,5′ Cyclic Phosphate and Gibberellic Acid on the Induction of Isocitrate Lyase Activity in the Endosperm of Germinating Castor Bean Seeds 219
MARSHALL, B., and BISCOE, P. V. A Mobile Apparatus for Measuring Leaf Photosynthesis in the field. 1008
MATTHEWS, S., *see* POWELL, ALISON A.
MATTHEWS, S., *see* ROGERSON, NICOLA E.
MAYER, A. M., *see* VOLK, RUTH.
MCCOMB, A. J., *see* HORNER, M.
MCCOMB, J. A., *see* HORNER, M.
MEIDNER, HANS. Sap Exudation via the Epidermis of Leaves. 1408
MEIDNER, HANS, *see* EDWARDS, MARY.
MIFLIN, B. J., *see* SHEWRY, P. R.
MIFLIN, B. J. *see* WALLSGROVE, R. M.
MILFORD, G. F. J., CORMACK, W. F., and DURRANT, M. J. Effects of Sodium Chloride on Water Status and Growth of Sugar Beet. 1380
MINCHIN, F. R., NEVES, M. C. P., SUMMERFIELD, R. J., and RICHARDSON, A. C. A Chamber Designed for Continuous, Long-term Monitoring of Legume Root Respiration. 507
MOORE, ANTHONY L., and BRIAN WILSON, S., Translocation of Some Anions, Cations, and Acids in Turnip (*Brassica napus* L.) Mitochondria. 607
MUNNS, RANA., *see* BARLOW, E. W. R.
MUREN, ROGER C., and FOSKET, D. E. Cytokinin-Mediated Translational Control of Protein Synthesis in Cultured Cells of *Glycine max*. 775
MURFET, I. C., *see* REID, J. B.
MURTHY, M. SREEDHARA, and SHIHORA, S. V. Effects of Aqueous Extracts and Leachates of *Aristida Adscensionis* on *Indigofera cordifolia* 1229
NARASIMHAREDDY, S. B., and SWAMY, P. M. Gibberellins and Germination Inhibitors in Viable and Non-viable Seeds of Peanut (*Arachis hypogea* L.) 215
NEVES, M. C. P., *see* MINCHIN, F. R.
NOBEL, PARK S., *see* SMITH, WILLIAM K.
NORTHCOTE, D. H., *see* MARRIOTT, K. M.
NUTMAN, P. S., *see* KUMARASINGHE, ROHINI M. K.
OFIR, M., *see* KIGEL, J.
OPARKA, K. J., *see* BARCLAY, G. F.
OSBORNE, DAPHNE J., *see* KNEE, MICHAEL.
OWEN, W. J., DELANEY, M. E., and ROGERS, L. J. Studies on the Sites of Inhibition of Photosynthetic Electron Transport in Barley by DDT (1,1,1, trichloro-2,2-bis(*p*-chlorophenyl)ethane) 986
OWEN, W. J., *see* DELANEY, M. E.
OZBUN, J. L., *see* PEET, M. M.
PAOLILLO, JR., D. J., and KASS, L. B. The Relationship Between Cell Size and Chloroplast Number in the Spores of a Moss, *Polytrichum*. 457
PAPPELIS, A. J., *see* COURTIS, W. S.
PARR, ADRIAN J., *see* POLLARD, ANNE S.
PATTERSON, B. D., and GRAHAM, D. Effect of Chilling Temperatures on the Protoplasmic Streaming of Plants from Different Climates. 736

PEET, M. M., OZBUN, J. L., and WALLACE, D. H. Physiological and Anatomical Effects of Growth Temperature on *Phaseolus vulgaris* L. Cultivars. 57
PENNY, M. G., *see* KELDAY, L. S.
PETERSON, P. J., *see* ASHER, C. J.
PETTY, J. A., *see* BOLTON, A. J.
PHILIPSON, J. J., and COUTTS, M. P. The Influence of Mineral Nutrition on the Root Development of Trees II. 864
PHILLIPSON, J. J., *see* COUTTS, M. P.
PHILLIPS, R., and HENSHAW, G. G. The Regulation of Synthesis of Phenolics in Stationary Phase Cell Cultures of *Acer pseudoplatanus* L. 785
PICKARD, WILLIAM F., *see* ROA, RICHARD L.
POLLARD, ANNE S., PARR, ADRIAN, J., and LOUGHMAN, BRIAN C. Boron in Relation to Membrane Function in Higher Plants. 831
PORTER, N. G., *see* LANCASTER, JANE E.
POWELL, ALISON A., and MATTHEWS, S. Deteriorative Changes in Pea Seeds (*Pisum sativum* L.) Stored in Humid or Dry Conditions. 225
POWELL, C. E., *see* GORDON, A. J.
PRATT, HELEN M., *see* SHEWRY, P. R.
QUARRIE, S. A., and JONES, H. G. Effects of Abscisic Acid and Water Stress on Development and Morphology of Wheat. 192
RAGHAVAN, V. Cell Morphogenesis and Macromolecule Synthesis during Phytochrome-controlled Germination of Spores of the Fern, *Pteric vittata*. 439
RAGHAVENDRA, A. S., and DAS, V. S. R. Antitranspirant Activity of Inhibitors of Cyclic Photophosphorylation. 480
RAGHAVENDRA, A. S., and DAS, V. S. R. Effects of Light Quality on Photosynthetic Carbon Metabolism in C_4 and C_3 Plants: Rapid Movements of Photosynthetic Intermediates Between Mesophyll and Bundle Sheath Cells 1169
RANGA RAO, V. Effect of Root Temperature on the Infection Processes and Nodulation in *Lotus* and *Stylosanthes*. 241
RANGO RAO, V. Effect of Temperature on the Nitrogenase Activity of Intact and Detached Nodules in *Lotus and Stylosanthes*. 261
RAVEN, J. A. ATP Synthesis Coupled to Nitrate Photoreduction in the Alga *Hydrodictyon africanum*. 314
REID, J. B., and MURFET, I. C. Flowering in *Pisum*: The Effect of Genotype, Plant Age, Photoperiod, and Number of Inductive Cycles 811
REID, J. B., and MURFET, I. C. Flowering in *Pisum*: The Effect of Light Quality on the Genotype *lf e Sn Hr*. 1357
REISNER, A. H., *see* BARLOW, E. W. R.
RESNIK, M. E., DE PALOMAR, S. G., and MANES, M. E. Phosphate Translocation from Young and Ageing Sett Roots in Sugar Cane Plants (*Saccharum officinarum* L.) 706
RICHARDSON, A. C., *see* MINCHIN, F. R.
RICKETTS, T. R. A Continuous Synchronous Culture and Sampling System for Algae 416
RICKETTS, T. R. Changes in Average Cell Concentrations of Various Constituents During Synchronous Division of *Platymonas striata* Butcher (Prasinophyceae). 1278
RIDGLEY, D. L., *see* GOLDSWORTHY, A.
ROA, RICHARD L., and PICKARD, WILLIAM F. Further Experiments on the Low Frequency Excess Noise of the Vacuolar Resting Potential of *Chara braunii* 1
ROBARDS, A. W., *see* WILSON, A. J.
ROBERTS, JOHN. The Use of Tree-cutting Techniques in the Study of the Water Relations of Mature *Pinus sylvestris* L. I. 751
ROGERS, L. J., *see* DELANEY, M. E.
ROGERS, L. J., *see* OWEN, W. J.
ROGERSON, NICOLA E., and MATTHEWS, S. Respiratory and Carbohydrate Changes in Developing Pea (*Pisum sativum* L.) Seeds in Relation to their Ability to Withstand Desiccation. 304
ROST, THOMAS L. The Position and Characteristics of 'Leaky' Cells in Root Tip Meristems of *Helianthus annuus*. 397
RUSSELL, G., *see* GRACE, J.

Rutter, J. C., Johnston, W. R., and Willmer, C. M. Free Sugars and Organic Acids in the Leaves of Various Plant Species and Their Compartmentation Between the Tissues. 1019
Ryle, G. J. A., *see* Gordon, A. J.
Sampaio, E. V. S. B., *see* Keys, A. J.
Sangwan-Norreel, B. S. Androgenic Stimulating Factors in the Anther and Isolated Pollen Grain Culture of *Datura innoxia* Mill. 843
Sargent, John A., *see* Knee, Michael.
Setter, T., *see* Greenway, H.
Sheriff, D. W. The Effect of Humidity on Water Uptake by, and Viscous Flow Resistance of, Excised leaves of a Number of Species: Physiological and Anatomical Observations. 1399
Shewry, P. R., Pratt, Helen M., Charlton, M. J., and Miflin, B. J. Two-dimensional Separation of the Prolamins of Normal and High Lysine Barley (*Hordeum vulgare* L.) 597
Shihora, S. V., *see* Murthy, M. Sreedhara.
Shone, M. G. T., and Wood, Ann V. Longitudinal Movement and Loss of Nutrients, Pesticides, and Water in Barley Roots. 872
Sielewiesiuk, J., *see* Skierczyńska, J.
Simon, E. W. Leakage from Fruit Cells in Water. 1147
Singh, Y. D., *see* Jasdanwala, R. T.
Sisson, William B. and Caldwell, Martyn M. Atmospheric Ozone Depletion: Reduction of Photosynthesis and Growth of a Sensitive Higher Plant Exposed to Enhanced u.v.-B Radiation. 691
Skierczyńska, J., Zarebski, W., Sielewiésiuk, J., and Śpiewla, E. Some Methods for the Measurements of Tonoplast Resistance of *Nitellopsis obtusa*. 37
Slack, P. T., Black, M., and Chapman, J. M. The Control of Lipid Mobilisation in *Cucumis* Cotyledons. 569
Smith, F. A., *see* Walker, N. A.
Smith, William K., and Nobel, Park S. Temperature and Water Relations for Sun and Shade Leaves of a Desert Broadleaf, *Hyptis emoryi*. 169
Śpiewla, E., *see* Skierczyńska, J.
Steele Scott, N., *see* Barlow, E. W. R.
Stern, A. I., *see* Weistrop, J. S.
Stevens, Evelyn, and Stevens, L. Glucose-6-phosphate Dehydrogenase Activity under Conditions of Water Limitation: a Possible Model System for Enzyme Reactions in Unimbibed Resting Seeds and its Relevance to Seed Viability. 292
Stevens, L., *see* Stevens, Evelyn.
Street, H. E., *see* Horner, M.
Summerfield, R. J., *see* Minchin, F. R.
Swamy, P. M., *see* Narasimhareddy, S. B.
Syrett, P. J., *see* Hipkin, C. R.
Tal, M., and Benzioni, A. Ion Imbalance in *Capsicum annuum*, *scabrous diminutive*, a Wilty Mutant of Pepper I. Sodium Fluxes 1337
Thakur, M. L. Phenolic Growth Inhibitors Isolated from Dormant Buds of Sugar Maple (*Acer saccharum Marsh*) 795
Thompson, A. G., and Bruinsma, J. Xanthoxin: A Growth Inhibitor in Light-grown Sunflower Seedlings, *Helianthus annuus* L. 804
Thompson, Alistair, Vogel, John, and Lee, Robert, Edward. Carbon Dioxide Uptake in Relation to a Plastid Inclusion Body in the Succulent *Kalanchoe pinnata* Persoon. 1037
Tsivion, Y., and Zamski, E. Translocation in Plants Possessing Supernumerary Phloem. II. The Included Phloem of *Bougainvillea glabra* Choisy and the Bicolateral Bundles of Cucumber (*Cucumis sativus* L.) 127
Tsivion, Y., *see* Zamski, E.
Tupý, J., *see* Balatková, Věra.
Van Staden, J., and Dimalla, G. G. A Comparison of the Endogenous Cytokinins in the Roots and Xylem Exudate of Nematode-resistant and Susceptible Tomato Cultivars. 1351

VEEN, B. W. The Uptake of Potassium, Nitrate, Water, and Oxygen by a Maize Root System in Relation to its Size. 1389
VOGEL, JOHN., *see* THOMPSON, ALISTAIR.
VOLK, RUTH., HAREL, E., MAYER, A. M., and GAN-ZVI, ESTHER. Catechol Oxidase in Tissue Culture of Apple Fruit 820
WAISEL, Y., *see* BEER, S.
WAINWRIGHT, S. J., and WOOLHOUSE, H. W. Some Physiological Aspects of Copper and Zinc Tolerance in *Agrostic tenuis* Sibth: Cell Elongation and Membrane Damage 1029
WALKER, N. A., and SMITH, F. A. Circulating Electric Currents Between Acid and Alkaline Zones Associated with HCO_3^- Assimilation in *Chara*. 1190
WALLACE, D. H., *see* PEET, M. M.
WALLSGROVE, R. M., HAREL, E., LEA, P. J., and MIFLIN, B. J. Studies on Glutamate Synthase from the Leaves of Higher Plants. 588
WALSBY, A. E., *see* GRANT, NEIL G.
WAUGHMAN, G. J. The Effect of Temperature on Nitrogenase Activity. 949
WEISBERGER, I., *see* HAQUE, AJAZ-UL.
WEISTROP, J. S., and STERN, A. I. Appearance of Photochemical Activity in Isolated Chloroplasts from Far-red-illuminated Leaves of *Phaseolus vulgaris*. 354
WHEELER, C. T., *see* HENSON, I. E.
WHEELER, T. C., *see* HENSON, I. E.
WHITTINGHAM, C. P., *see* KUMARASINGHE, K. S.
WILLCOCKS, D. A., *see* ANDERSON, W. P.
WILLMER, C. M., *see* RUTTER, J. C.
WILSON, A. J. and ROBARDS, A. W., and GOSS, M. G. Effects of Mechanical Impedance on Root Growth in Barley, *Hordeum vulgare* L. II. Effects on Cell Development in Seminal Roots 1216
WOOD, ANN V., *see* SHONE, M. G. T.
WOOLHOUSE, H. W., *see* WAINWRIGHT, S. J.
WRIGHT, BARBARA J., *see* ANDERSON, W. P.
WRIGLEY, A., and LORD, J. M. The Effects of Gibberellic Acid on Organelle Biogenesis in the Endosperm of Germinating Castor Bean Seeds. 345
YARUS, STEPHAN, *see* MAHLBERG, PAUL G.
YEO, A. R., KRAMER, D., LÄUCHLI, A., and GULLASCH, J. Ion Distribution in Salt-stressed Mature *Zea mays* Roots in Relation to Ultrastructure and Retention of Sodium 17
ZAMSKI, E., and TSIVION, Y. Translocation in Plants Possessing Supernumerary Phloem. I. ^{14}C-Assimilates and Auxin in the Internal Phloem of Tobacco (*Nicotiana tabacum* L.) 117
ZAMSKI, E., *see* TSIVION, Y.
ZAREBSKI, W., *see* SKIERCZYŃSKA, J.